Fig. 1

Fig. 2

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Fig. 3

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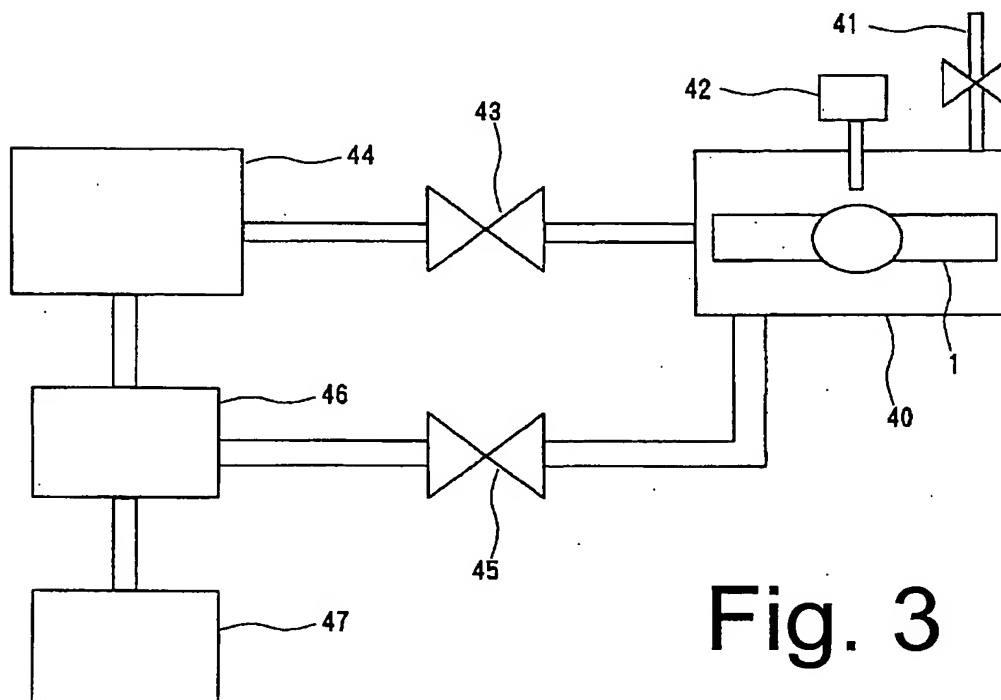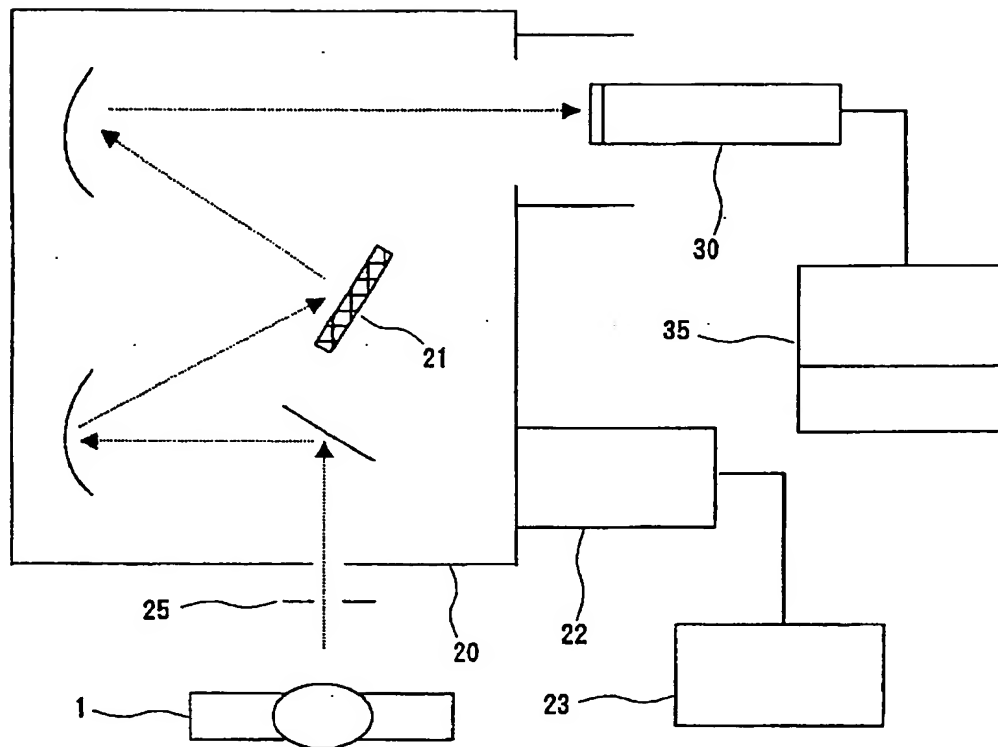
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Fig. 4

	Mixing ratio of the encapsulated gases O_2/Ar (%)	Condition for the degassing treatment of the material of which the discharge vessel is formed	Condition for the thermal treatment of the electrodes	Ratio b/a	Ratio c/a	Ratio d/a	Ratio e/a	Lumen maintenance factor (%)	Value of the increase of the voltage (V)	Concentration of the carbon compounds (ppm)	Evaluation
1 (comparison)	0	G 1	H 3	3.0×10^{-5}	1.6×10^{-1}	2.1×10^{-4}	4.0×10^{-4}	37	13.0		X
2 (comparison)	0	G 3	H 1	6.5×10^{-5}	6.0×10^{-3}	4.0×10^{-2}	8.8×10^{-4}	44	9.0	.	X
3 (comparison)	0	G 3	H 3	9.7×10^{-6}	4.0×10^{-3}	6.0×10^{-4}	3.9×10^{-4}	47	8.5		X
4 (comparison)	0.1	G 1	H 1	2.5×10^{-5}	2.2×10^{-1}	6.9×10^{-4}	3.6×10^{-2}	55	11.0	3000	X
5 (comparison)	0.1	G 1	H 2	2.0×10^{-4}	1.8×10^{-1}	1.5×10^{-4}	4.5×10^{-3}	48	11.5		X
6 (comparison)	0.1	G 1	H 3	1.5×10^{-4}	1.9×10^{-1}	2.7×10^{-4}	4.8×10^{-4}	44	8.0		X
7 (comparison)	0.1	G 2	H 1	3.0×10^{-4}	2.7×10^{-2}	5.5×10^{-4}	4.0×10^{-2}	50	9.5	600	X
8 (invention)	0.1	G 2	H 2	4.5×10^{-4}	5.4×10^{-2}	3.1×10^{-4}	1.2×10^{-2}	83	8.0	300	O
9 (invention)	0.1	G 2	H 3	3.5×10^{-4}	1.4×10^{-1}	4.4×10^{-4}	6.3×10^{-4}	87	15.0	200	O
10 (comparison)	0.1	G 3	H 1	2.0×10^{-4}	7.2×10^{-3}	4.8×10^{-2}	5.5×10^{-4}	52	12.0		X
11 (invention)	0.1	G 3	H 2	1.0×10^{-4}	4.5×10^{-3}	4.5×10^{-3}	1.8×10^{-4}	85	11.0	400	O
12 (invention)	0.1	G 3	H 3	1.5×10^{-4}	4.8×10^{-3}	7.2×10^{-4}	3.3×10^{-4}	90	7.5	100	O
13 (comparison)	0.5	G 1	H 1	6.0×10^{-4}	2.1×10^{-1}	5.0×10^{-4}	3.4×10^{-2}	43	25		X
14 (comparison)	0.5	G 1	H 2	5.3×10^{-3}	2.1×10^{-1}	8.1×10^{-4}	5.2×10^{-3}	39	15		X
15 (comparison)	0.5	G 1	H 3	3.4×10^{-3}	1.9×10^{-1}	4.5×10^{-4}	4.8×10^{-4}	45	16		X
16 (comparison)	0.5	G 2	H 1	7.2×10^{-4}	6.0×10^{-2}	3.6×10^{-4}	3.8×10^{-2}	50	14	1000	X
17 (invention)	0.5	G 2	H 2	1.2×10^{-2}	1.1×10^{-1}	7.5×10^{-4}	1.4×10^{-2}	92	12	500	O
18 (invention)	0.5	G 2	H 3	7.9×10^{-3}	6.0×10^{-2}	5.8×10^{-4}	6.4×10^{-4}	90	8.5	300	O

Fig. 5

	Mixing ratio of the encapsulated gases O₂/Ar (%)	Condition for the degassing treatment of the material of which the discharge vessel is formed	Condition for the thermal treatment of the electrodes	Ratio b/a	Ratio c/a	Ratio d/a	Ratio e/a	Lumen maintenance factor (%)	Value of the increase of the voltage (V)	Concentration of the carbon compounds (ppm)	Evaluation
19 (comparison)	0.5	G 3	H 1	4.8×10^{-3}	6.8×10^{-3}	4.6×10^{-2}	7.6×10^{-4}	48	23		X
20 (invention)	0.5	G 3	H 2	2.6×10^{-3}	5.2×10^{-2}	5.2×10^{-3}	1.3×10^{-4}	88	16	500	O
21 (invention)	0.5	G 3	H 3	3.4×10^{-3}	4.8×10^{-3}	7.3×10^{-4}	3.3×10^{-4}	92	12	320	O
22 (comparison)	1	G 1	H 1	4.8×10^{-3}	2.0×10^{-1}	5.0×10^{-4}	4.1×10^{-2}	36	14		X
23 (comparison)	1	G 1	H 2	1.1×10^{-1}	2.4×10^{-1}	8.3×10^{-4}	5.3×10^{-3}	51	8	900	X
24 (comparison)	1	G 1	H 3	4.0×10^{-2}	2.0×10^{-1}	1.2×10^{-4}	4.8×10^{-4}	37	7.5		X
25 (comparison)	1	G 2	H 1	5.8×10^{-3}	5.9×10^{-2}	6.0×10^{-4}	4.6×10^{-2}	45	11		X
26 (invention)	1	G 2	H 2	9.5×10^{-2}	1.3×10^{-1}	9.0×10^{-4}	9.0×10^{-3}	90	12.5	600	O
27 (invention)	1	G 2	H 3	6.5×10^{-2}	9.0×10^{-2}	1.0×10^{-4}	6.3×10^{-4}	87	16	150	O
28 (comparison)	1	G 3	H 1	7.2×10^{-2}	6.7×10^{-3}	5.5×10^{-2}	4.0×10^{-4}	46	25		X
29 (invention)	1	G 3	H 2	5.2×10^{-2}	6.0×10^{-3}	1.2×10^{-2}	3.3×10^{-4}	89	14	300	O
30 (invention)	1	G 3	H 3	1.2×10^{-1}	5.1×10^{-3}	7.2×10^{-4}	4.5×10^{-4}	91.5	8.5	440	O
31 (comparison)	2	G 1	H 3	2.5×10^{-1}	2.0×10^{-1}	1.4×10^{-4}	4.0×10^{-4}	44	8		X
32 (comparison)	2	G 3	H 1	1.9×10^{-2}	6.7×10^{-3}	1.5×10^{-2}	7.3×10^{-4}	41	16		X
33 (comparison)	2	G 3	H 3	1.4×10^{-1}	4.8×10^{-3}	6.0×10^{-4}	3.5×10^{-4}	---	---		X